VIKING PRODUCT MANUAL

COMMUNICATION & SECURITY SOLUTIONS

PA-15

15 Watt Paging Amp with Background Music and Loud Ringing

April 8, 2013

Add Paging, Loud Ringing and Background Music to Centrex, PABX, IP, or Key Systems

The **PA-15** interfaces with virtually any telephone system to provide 15 watts of paging power - enough to drive fifteen 8-ohm paging horns or speakers.

The **PA-15** provides 36V talk battery for interfacing with an **FXO** or unused analog line input/trunk port. With the flip of a switch, the unit can connect to a **FXS** or PABX/Centrex station ring trip port or connect to a 600 ohm paging port. When interfacing with systems that do not provide a paging contact closure, the built-in voice activation (**VOX**) is in control.

After paging, the **PA-15** auto disconnects on CPC, busy signal, silence, or default disconnect timer (helps prevent accidental paging system lock-up if phone is hung-up incorrectly). The unit will generate adjustable loud ringing from an independent ringing analog **FXS** / PABX / Centrex station or from a dry contact closure. The **PA-15** can provide

background music (muted during page) if connected to an external music source.

Replaces the CPA-7B, provides twice the power and many new features (shown in bold below).

Features

- **15 Watts of paging power**
- **Drive up to (15) 8-ohm speakers**
- 600 Ohm output to drive additional amplifiers
- Select: **FXO** (loop start), **FXS** (ring trip) or paging port (**VOX** relay) interface mode
- Independent volume controls for Paging, Ringing Tones and **Background Music**
- **36V DC talk battery** for interfacing with **FXO** or unused phone system line input/trunk port
- Compatible with 24V to 48V **FXS** (ring trip) analog station operation
- 800 Hz pre-announce page tone **(on/off)**
- Provides "Night Bell" warble tone via contact closure or **independent ringing analog circuit**
- **Choose one of four ringing sounds:**
  - Electronic warble (traditional loud ringer)
  - Double gong (two identical "gong" tones)
  - Quadruple chime (four descending chime tones)
  - Door chime (ding-dong)
- Night transfer switch input
- CPC detection for immediate disconnect
- **Busy signal detect disconnect**
- **Adjustable silence time out disconnect**
- Programmable VOX trigger sensitivity and time out
- 16 to 72 second (or off) default disconnect timer

Applications

- Page from virtually any POTS, Centrex, PABX, digital or IP phone system
- Amplified loud paging
- Loud ringing
- Night bell
- Background music **in all paging modes**
- **Loud ringing + door chime over paging**

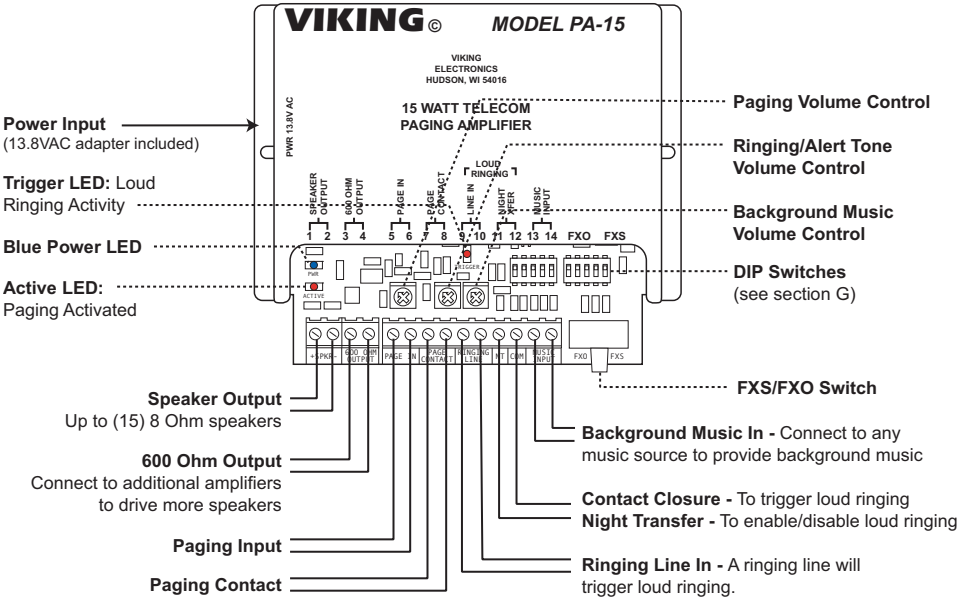
Specifications

Power: 120V AC/13.8V AC 1.25 A, UL listed adapter provided
Amplifier: 15 watts - to power up to (15) 8-ohm speakers (cascadable to drive additional speakers)
Dimensions: 133 mm x 89 mm x 44 mm (5.25" x 3.5" x 1.75")
Shipping Weight: 1.36 kg (3 lbs)
Environmental: 0°C to 32°C (32°F to 90°F) with 5% to 95% non-condensing humidity
Speakers: 25AE, 30AE, 35AE, and 40AE speakers to complete the system (DOD# 498)
Talk Battery Output: 36V DC (loop current 36mA nominal)
Maximum Speaker Cable Length: 91 m (300 ft) 18 AWG
Connections: 14 cage clamp screw terminals

www.vikingelectronics.com
Information: (715) 386-8861

Features Overview

IMPORTANT: *Electronic devices are susceptible to lightning and power station electrical surges from both the AC outlet and the telephone line. It is recommended that a surge protector be installed to protect against such surges.*

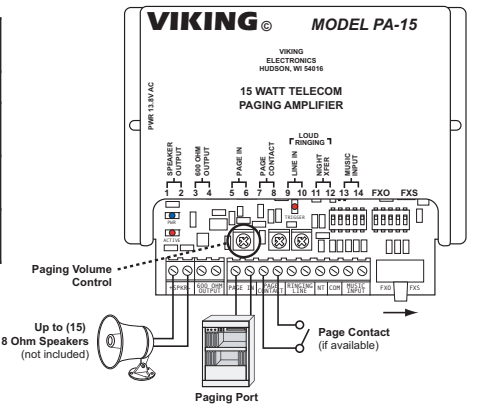


Installation and Programming

A. Amplified Paging

1. Paging Port

Step 1	Move the FXS/FXO switch to the FXS position.
Step 2	Move DIP switch 6 to ON.
Step 3	Connect terminals **5** and **6** to the paging port.
Step 4	Connect terminals **7** and **8** to the paging contacts (if available).*
Step 5	Adjust the page volume control to the desired volume.



** **Note:** If paging contacts are not available, VOX is in control. See **Programming** section **E** for VOX adjustments.*

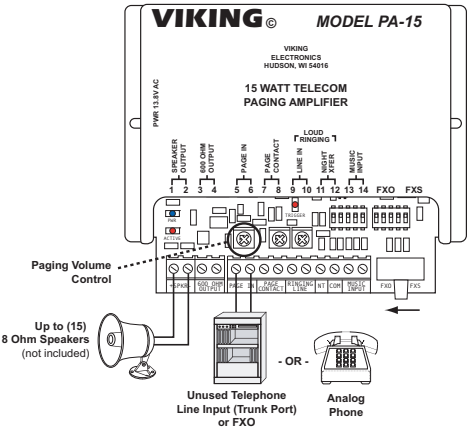
Important: *Page Alert Tone is not given when page contacts are not provided.*

Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see **DOD# 498** and **895**.*

2. Trunk/Line Port

Step 1	Move the FXS/FXO switch to the FXO position.
Step 2	Move DIP switch 6 to OFF.
Step 3	Connect terminals **5** and **6** to an unused telephone line input (trunk port) or FXO.
Step 4	Adjust the page volume control to the desired volume.

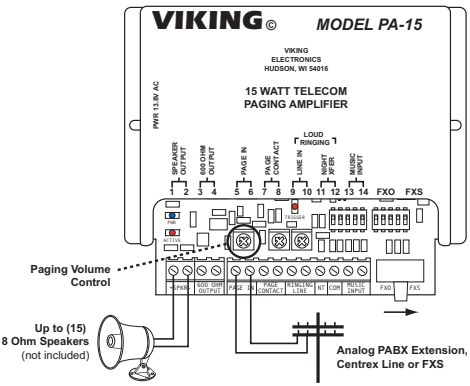
Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*



3. Ring Trip

Step 1	Move the FXS/FXO switch to the FXS position.
Step 2	Move DIP switch 6 to OFF.
Step 3	Connect terminals **5** and **6** to an analog PABX extension, Centrex Line or FXS.
Step 4	Adjust the page volume control to the desired volume.

Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*

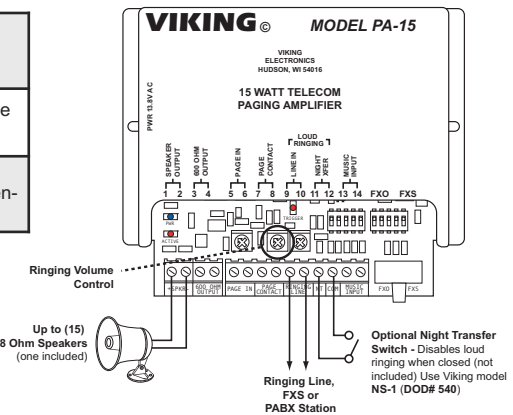

VIKING ©
MODEL PA-15
VIKING ELECTRONICS HUDSON, WI 54016
15 WATT TELECOM PAGING AMPLIFIER
PWR 13.8V AC
SPEAKER OUTPUT
600 OHM OUTPUT
PAGE IN
PAGE CONTACT
LINE IN
NIGHT XFER
MUSIC INPUT
LOUD RINGING
1 2 3 4 5 6 7 8 9 10 11 12 13 14 FXO FXS
Paging Volume Control
Up to (15) 8 Ohm Speakers (not included)
Analog PABX Extension, Centrex Line or FXS

B. Loud Ringing/Night Bell

1. Ringing Analog Line

Step 1	Connect terminals **9** and **10** to a ringing line, FXS or analog PABX station.
Step 2	The ringing volume control may be adjusted to required level.
Step 3	A night transfer switch may be added to terminals **11** and **12** to enable and disable loud ringing.

Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*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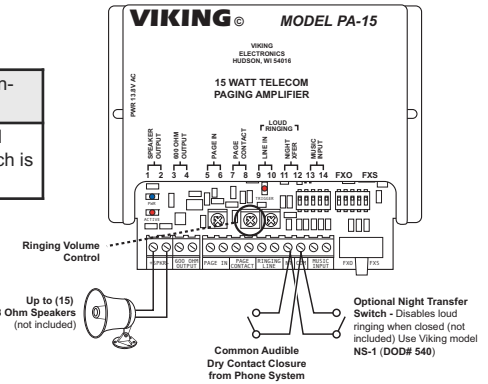
MODEL PA-15
VIKING ELECTRONICS HUDSON, WI 54016
15 WATT TELECOM PAGING AMPLIFIER
PWR 13.8V AC
SPEAKER OUTPUT
600 OHM OUTPUT
PAGE IN
PAGE CONTACT
LINE IN
NIGHT XFER
MUSIC INPUT
LOUD RINGING
1 2 3 4 5 6 7 8 9 10 11 12 13 14 FXO FXS
Ringing Volume Control
Up to (15) 8 Ohm Speakers (one included)
Optional Night Transfer Switch - Disables loud ringing when closed (not included) Use Viking model NS-1 (DOD# 540)
Ringing Line, FXS or PABX Station

2. Dry Contact (Common Audible) Closure from Phone System

Step 1	Connect the common audible dry contact closure to terminals **11** and **12**.
Step 2	A dry contact closure will initiate loud ringing when the Night Transfer switch is open.

Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*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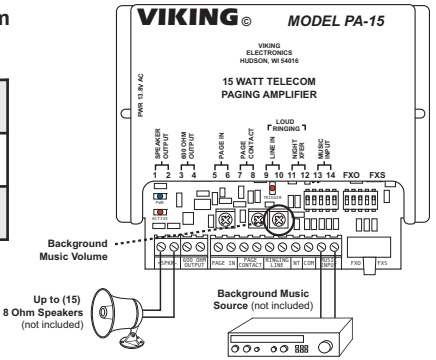
MODEL PA-15
VIKING ELECTRONICS HUDSON, WI 54016
15 WATT TELECOM PAGING AMPLIFIER
PWR 13.8 V AC
SPEAKER OUTPUT
600 OHM OUTPUT
PAGE IN
PAGE CONTACT
LINE IN
NIGHT XFER
MUSIC INPUT
LOUD RINGING
1 2 3 4 5 6 7 8 9 10 11 12 13 14 FXO FXS
Ringing Volume Control
Up to (15) 8 Ohm Speakers (not included)
Optional Night Transfer Switch - Disables loud ringing when closed (not included) Use Viking model NS-1 (DOD# 540)
Common Audible Dry Contact Closure from Phone System

C. Adding Background Music to Your Paging System in All Page Modes

Step 1	Connect a background music source to the background music input terminals **13** and **14**.
Step 2	Adjust the background music volume control to the desired level.
Step 3	Background music will mute when paging or loud ringing/night bell is active.

Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*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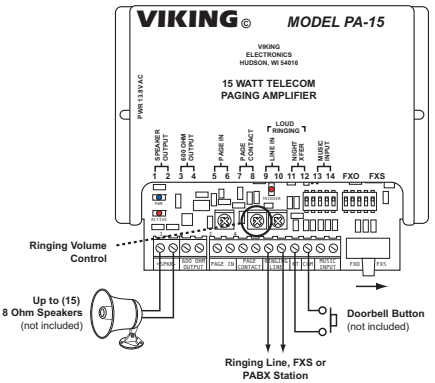
VIKING ELECTRONICS HUDSON, WI 54016
15 WATT TELECOM PAGING AMPLIFIER
PWR 13.8V AC
LOUD RINGING
1 2 3 4 5 6 7 8 9 10 11 12 13 14 FXO FXS
Background Music Volume
Up to (15) 8 Ohm Speakers (not included)
Background Music Source (not included)

D. Loud Ringing + Door Chime

Step 1	Connect terminals **9** and **10** to a ringing line, FXS or analog PABX station.
Step 2	Connect a doorbell button to terminals **11** and **12**.
Step 3	Move DIP switch 5 to ON.
Step 4	Set ringing sound output (DIP switches 1 and 2) to something other than door chime.
Step 5	The ringing volume control may be adjusted to the required level.

Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*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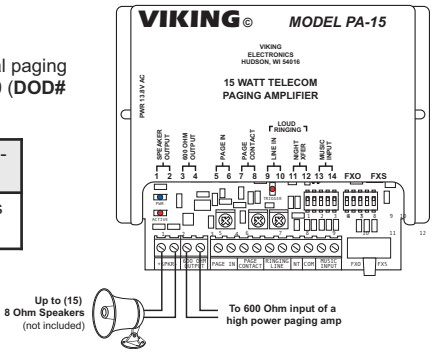
15 WATT TELECOM PAGING AMPLIFIER
PWR 13.8 V AC
LOUD RINGING
1 2 3 4 5 6 7 8 9 10 11 12 13 14 FXO FXS
Ringing Volume Control
Up to (15) 8 Ohm Speakers (not included)
Doorbell Button (not included)
Ringing Line, FXS or PABX Station

E. Additional Paging Power

When more than 15 Watts of power is required, an additional paging amp can be added, such as the 30 Watt Viking model **PA-30** (**DOD# 489**) or the 60 Watt Viking model **PA-60** (**DOD# 493**)

Step 1	Connect the main **PA-15** as described on previous pages.
Step 2	Connect the **PA-15** 600 Ohm Output (terminals **3** and **4**) to a second paging amp input.

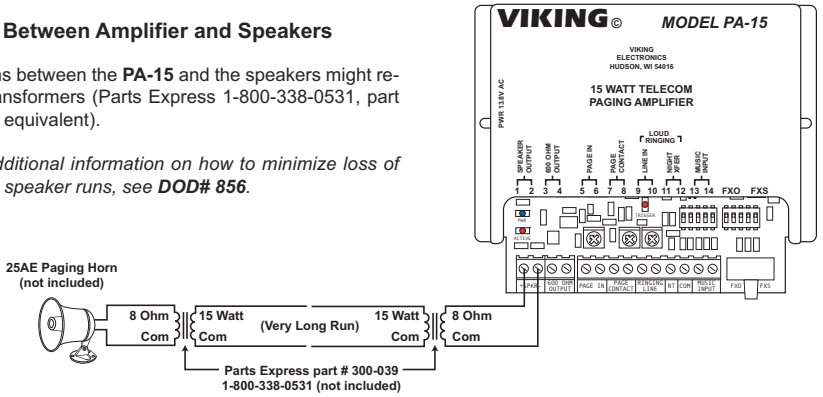
Note: *For information on speakers to use, ambient noise levels, and speaker wiring, see* ***DOD# 498*** *and* ***895****.*


VIKING ©
MODEL PA-15
VIKING ELECTRONICS HUDSON, WI 54016
15 WATT TELECOM PAGING AMPLIFIER
PWR 13.8 V AC
LOUD RINGING
1 2 3 4 5 6 7 8 9 10 11 12 13 14 FXO FXS
Up to (15) 8 Ohm Speakers (not included)
To 600 Ohm input of a high power paging amp

F. Long Runs Between Amplifier and Speakers

Very long runs between the **PA-15** and the speakers might require 70V transformers (Parts Express 1-800-338-0531, part # 300-039 or equivalent).

Note: *For additional information on how to minimize loss of audio in long speaker runs, see* ***DOD# 856****.*



G. DIP Switch Programming and Volume Controls

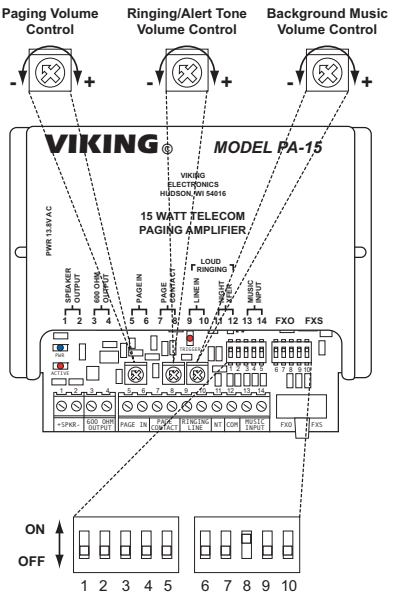
Switch 1	Switch 2	Sound Output Description
OFF	OFF	Electronic warble
OFF	ON	Double gong
ON	OFF	Quadruple chime
ON	ON	Door chime

Switch 3	Switch 4	Silence Time Out
OFF	OFF	Off
OFF	ON	2.5 seconds
ON	OFF	5.0 seconds
ON	ON	10 seconds

DIP Switch	Position	Description
5	ON	Loud ring + door chime
5	OFF	Loud ring only

DIP Switch	Position	Description
6	ON	600 Ohm page port mode
6	OFF	FXS (ring trip), FXO (trunk input)
7	ON	Minimum VOX sensitivity
7	OFF	Maximum VOX sensitivity
8	ON	Pre-announce page tone ON
8	OFF	Pre-announce page tone OFF

Switch 9	Switch 10	Default Timer	Busy Detection
OFF	OFF	Off	On
OFF	ON	16 seconds	Off
ON	OFF	36 seconds	On
ON	ON	72 seconds	On



Note: *DIP switches shown in the factory default settings.*

Operation

A. Background Music In

This audio input allows background music from an external source to connect to the **PA-15**. While any other input is active, background music is turned off, so music will only be heard through the speakers when all other inputs are idle. A 3.5mm (1/8") audio cable is provided, trim the connector off of one end and connect the wires to screw terminals 13 & 14, and the other end to a line level music source. The audio level can be set using the trim POT furthest to the right (R5).

B. Loud Ringing

1. Ringing Line

This input provides loud ringing through the speakers whenever ringing voltage is detected. Connect an analog ringing line to screw terminals 9 & 10 for this feature.

2. Contact Closure

Some phone systems provide a “common audible” dry contact closure whenever a call is coming in. Wire the contact closure across screw terminals 11 & 12 for this feature.

DIP Switch 5 ON: This input provides a door chime through the speakers when a contact closure is detected.

DIP Switch 5 OFF: This input provides loud ringing through the speakers when a contact closure is detected.

3. Night Transfer

This input can be used to disable loud ringing. For example, if loud ringing is only necessary during off business hours, an external switch can be added to disable loud ringing during the day, and transfer it back on at night. Connect an external switch across screw terminals 11 & 12, when the switch is closed, the loud ringing sound (or door chime if DIP switch 5 is ON) will sound once and loud ringing will be disabled. When the switch is opened, a double beep will be heard (if DIP switch 5 is OFF) through the speakers to indicate loud ringing enabled.

4. Loud Ringing Sounds

The **PA-15** can produce one of 4 selectable loud ringing sounds. Use DIP switches 1 and 2 to choose between Electronic Warble, Double Gong, Quadruple Chime, or Door Chime sounds. Select the Electronic Warble tone (traditional loud ringing) for noisy areas. The softer chimes work well in quieter environments. The loud ringing volume can be adjusted with the trim POT in the middle (R13).

C. Paging

1. Analog Extension or FXS port

The **PA-15** can be interfaced to an analog extension or FXS port by setting the FXO/FXS switch to FXS and connecting the wires to screw terminals 5 & 6. In this mode a ring signal triggers the **PA-15** to grab the line, send a tone over the line, and then (if DIP switch 8 is on) over the speakers, after which you may speak. The **PA-15** will end the page when either a busy signal (if default timer is not 16 seconds) or CPC is detected, or the silence timer (DIP switches 3 & 4) or default timer (DIP switches 9 & 10) runs out. Paging audio volume can be adjusted with the trim POT on the left (R6).

2. Trunk Input, FXO port, or Analog Phone

The **PA-15** can be interfaced to a trunk input, FXO port, or analog phone by setting the FXO/FXS switch to FXO and connecting the wires to screw terminals 5 & 6. In this mode an off hook condition triggers the **PA-15** to pause 1 second, send a tone over the line, and then (if DIP switch 8 is on) over the speakers, after which you may speak. The **PA-15** will end the page with a 2 second CPC when either a busy signal (if default timer is not 16 seconds) or hang up is detected, or the silence timer (DIP switches 3 & 4) or default timer (DIP switches 9 & 10) runs out.

3. Paging Port

The **PA-15** can be interfaced to a phone system paging port by setting the FXO/FXS switch to FXS, turning DIP switch 6 ON, and connecting the wires to screw terminals 5 & 6.

With Page Contacts: If the phone system supplies a page contact, wire it to screw terminals 7 & 8. When the contact closes the **PA-15** will send a tone to the port and then (if DIP switch 8 is ON) over the speakers, after which you may speak. The **PA-15** will end the page when the contacts open.

Without Page Contacts: If the page contacts are not used, then the **PA-15** relies on a Voice Activation Switch (VOX) feature that will switch to paging when voice audio is detected. In this mode the **PA-15** does not have the opportunity to supply a page alert tone. The VOX sensitivity can be adjusted by turning DIP switch 7 ON to reduce the sensitivity if noise on the wires creates false pages. The **PA-15** will end the page when the silence timer (DIP switches 3 & 4) or default timer (DIP switches 9 & 10) runs out.

D. 600 Ohm Output

This audio output is provided so that additional paging amplifiers can be added if additional paging power is needed. This is a 600 ohm line level output that can be connected into any single ended amplifier input (such as a second **PA-15** or a **PA-60**).

E. Speakers

The **PA-15** contains a high current amplifier which can drive up to fifteen 8-ohm speakers. The more speakers that are used, the less shared power each speaker will receive, the softer they will each play. A single speaker with a short speaker wire run will receive the full 15 watts of power, where if 15 speakers are used, there will be less then 1 watt of power available for each speaker. See **DOD# 895** for additional information on paging horn volume per number of speakers being used. If additional paging power is needed, add a Viking model **PA-60** for 60 more watts of paging power.

Another consideration when budgeting speakers is paging power that is lost in the wire runs. A single speaker on a short heavy gauge wire will have no loss, but many speakers on a long light gauge wire will have an unacceptable amount of volume lost. Use the below chart as a guide line to keep the volume lost limited to less then 5db. Using half the recommended distance or half as many speakers per run will keep the volume lost limited to less then 3db.

F. Managing Power Losses

Maximum recommended length (in feet) for the number of 8 Ohm speakers on a wire pair to maintain a volume loss of less than 5dB.

Wire Gauge Size	1	2	3	4	5	6	8	10	12	15
#16	2,000'	1,000'	665'	500'	400'	330'	250'	200'	165'	135'
#18	1,250'	625'	420'	315'	250'	210'	155'	125'	105'	85'
#20	800'	400'	265'	200'	160'	130'	100'	80'	65'	50'
#22	500'	250'	165'	125'	100'	80'	60'	50'	40'	35'
#24	315'	155'	105'	80'	60'	50'	40'	30'	25'	20'

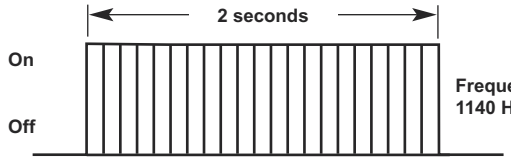
Number of 8 Ohm Speakers on a Wire Run

Note 1: *Mount the amplifier close to where the speakers are installed to minimize the speaker wire run lengths.*
Note 2: *Using half the recommended distance or half as many speakers per run will keep the volume lost limited to 3db.*
Note 3: *Doubling up the wires will allow double the length, or reduce the amount of volume loss.*
Note 4: *Heavier gauge wire, fewer speakers per run, and shorter runs will all minimize volume loss.*
Note 5: *Use 70-Volt or 25-Volt speakers in applications that require wire run lengths greater than specified in the chart.*

Sound Output Specifications

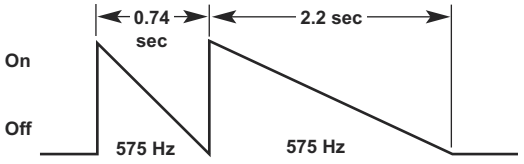
All tones require a minimum of 180mS of ringing voltage (or 50mS contact closure) to trigger. Once triggered, the loud ringing sound selected by DIP switches 1 & 2 will be created as per the chart below and on page 8. The ringing must stop or the contacts must open for at least 50mS before the **PA-15** can produce another loud ringing sound.

A. Electronic Warble (Traditional Loud Ringer)

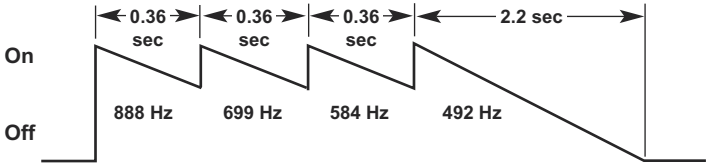


Frequency alternates between 1440 Hz and 1140 Hz 20 times per second.

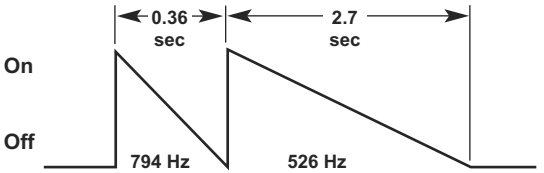
B. Double Gong (Two "Gong" Tones)



C. Quadruple Chime (Four Descending Chime Tones)



D. Door Chime (Ding-Dong)



Warranty

IF YOU HAVE A PROBLEM WITH A VIKING PRODUCT, CONTACT: VIKING TECHNICAL SUPPORT AT (715) 386-8666

Our Technical Support Department is available for assistance Monday 8am - 4pm and Tuesday through Friday 8am - 5pm central time. So that we can give you better service, before you call please:

1. Know the model number, the serial number and what software version you have (see serial label).
2. Have your Technical Practice in front of you.
3. It is best if you are on site.

RETURNING PRODUCT FOR REPAIR

The following procedure is for equipment that needs repair:

1. Customer must contact Viking's Technical Support Department at 715-386-8666 to obtain a Return Authorization (RA) number. The customer MUST have a complete description of the problem, with all pertinent information regarding the defect, such as options set, conditions, symptoms, methods to duplicate problem, frequency of failure, etc.
2. Packing: Return equipment in original box or in proper packing so that damage will not occur while in transit. Static sensitive equipment such as a circuit board should be in an anti-static bag, sandwiched between foam and individually boxed. All equipment should be wrapped to avoid packing material lodging in or sticking to the equipment. Include ALL parts of the equipment. C.O.D. or freight collect shipments cannot be accepted. Ship cartons prepaid to: **Viking Electronics, 1531 Industrial Street, Hudson, WI 54016**
3. Return shipping address: Be sure to include your return shipping address inside the box. We cannot ship to a PO Box.
4. RA number on carton: In large printing, write the R.A. number on the outside of each carton being returned.

RETURNING PRODUCT FOR EXCHANGE

The following procedure is for equipment that has failed out-of-box (within 10 days of purchase):

1. Customer must contact Viking's Technical Support at 715-386-8666 to determine possible causes for the problem. The customer MUST be able to step through recommended tests for diagnosis.
2. If the Technical Support Product Specialist determines that the equipment is defective based on the customer's input and troubleshooting, a Return Authorization (R.A.) number will be issued. This number is valid for fourteen (14) calendar days from the date of issue.
3. After obtaining the R.A. number, return the approved equipment to your distributor, referencing the R.A. number. Your distributor will then replace the Viking product using the same R.A. number.
4. **The distributor will NOT exchange this product without first obtaining the R.A. number from you. If you haven't followed the steps listed in 1, 2 and 3, be aware that you will have to pay a restocking charge.**

LIMITED WARRANTY

Viking warrants its products to be free from defects in the workmanship or materials, under normal use and service, for a period of one year from the date of purchase from any authorized Viking distributor or 18 months from the date manufactured, which ever is greater. If at any time during the warranty period, the product is deemed defective or malfunctions, return the product to Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI., 54016. Customer must contact Viking's Technical Support Department at 715-386-8666 to obtain a Return Authorization (R.A.) number.

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Product Support: (715) 386-8666

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